EML

Environmental Measurements Laboratory

"A Federal Resource"

Programmatic Overview

National And International Agencies

EML's long-standing reputation for excellence in environmental measurements has led to its being called upon for assistance and consultation by numerous organizations in the U.S. and around the world. The Laboratory fulfills special needs within the scientific community outside of DOE that relate to the assessment of radiation and radioactivity in the environment. Projects of this nature are a natural extension of the staff's collective expertise and are in keeping with a larger role that a specialized laboratory such as EML plays within the DOE family.

Descriptions

EML, under contract to the U.S. Nuclear Regulatory Commission (NRC), developed new radiological survey designs and measurement methods for residual radioactivity that will be used to meet rulemaking decommissioning criteria.

The U.S. Air Force provides funding to EML for the development of monitoring instrumentation to support verification programs under the Comprehensive Test Ban Treaty.

EML is working with the National Aeronautics and Space Administration (NASA) to study the ionizing radiation components in the stratosphere to provide essential information on the radiation risks associated with high altitude flights that are planned with the next generation of supersonic commercial aircraft.

The International Atomic Energy Agency (IAEA) relies on EML for expert laboratory analysis of samples, to serve on working groups for the assessment of radiological situations around the globe, and to perform direct field measurements in contaminated areas.

EML scientists provide training courses to federal and state agencies and to international institutes.

EML scientists are invited by the scientific community to participate in consultations and reviews of programs, proposals, reports and other documents.

Activities and Accomplishments

- ***Played*** a major role as technical representatives for the NRC in the development of the Multi-Agency Radiological Site and Survey Investigation Manual (MARSSIM) which provides guidance for planning, conducting, evaluating and documenting radiological surveys for decontamination and decommissioning of nuclear facilities.
- ***Provides*** training courses on MARSSIM, including final status survey design, data analysis, data quality assessment, and statistical methodology.
- ***Authored*** three reports published by the NRC: "A Non-Parametric Statistical Methodology for the Design and Analysis of Final Status Decommissioning Surveys" (NUREG-1505); "Measurement Methods for Radiological Surveys in Support of New Decommissioning Criteria" (NUREG-1506); and "Background as a Residual Radioactivity Criterion for Decommissioning" (NUREG-1501).
- ***Developed*** AUTORAMP II, a redesign of the original AUTORAMP, which has been in continuous operation since November 1997, and published a paper, "An Automatic Unit for Unattended Aerosol Collection, Gamma-Ray Analysis and Data Transmission From Remote Locations," in Radioactivity & Radiochemistry.

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Activities and Accomplishments (con't)

- ***Member*** of Informal Radionuclide Workshop of the International Monitoring System Network to provide scientific recommendations to Working Group B of the Comprehensive Test Ban Treaty Preparatory Commission .
- ***Collected*** unique cosmic-ray data using an instrumentation package that includes a neutron spectrometer during several high altitude flights of NASA's ER-2 aircraft.
- ***Analyzed*** samples collected in the atolls of Mururoa and Fangataufa in French Polynesia for ^{238}Pu, $^{239/240}$Pu, ^{241}Am, and ^{90}Sr at the request of the IAEA Seibersdorf Laboratory.
- ***Member*** of Working Group on Source Term of the IAEA "Study of the Radiological Situation at the Atolls of Mururoa and Fangataufa."
- ***Served*** as a consultant at IAEA meeting on "Establishing Reference Radioanalytical Procedures for the Determination of Low Level Radionuclides in Air Particulate, Soils and Sediments."
- ***Reviewed*** the performance, structure and future direction of the Analytical Quality Control Services Program of the IAEA's Department of Research and Isotopes.
- ***Fabricated*** an automatic micro-pipette for the IAEA Seibersdorf Laboratory in support of environmental monitoring activities for nonproliferation treaty violations.
- ***Provided*** training programs to visiting scientists from the Taiwan Power Company on the analysis of low-level environmental samples and to visiting scientist from the National Institute of Radiological Sciences in Japan on radon research and aerosol particles.
- ***Assisted*** in the development of a Quality Assurance Program at the Taiwan Power Company.
- ***Contributed*** to, and reviewed, the National Cancer Institute's report on "Estimated Exposure and Thyroid Doses Received by the American People from Iodine-131 in Fallout Following Nevada Atmospheric Nuclear Bomb Tests."
- ***Reviewing*** present state of dosimetry estimates for survivors of the Hiroshima and Nagasaki A-Bombs as a member of the National Academy of Sciences-National Research Council Committee on Dosimetry for the Radiation Effects Research Foundation.
- ***Participated*** in Semipalatinsk Dose Reconstruction Workshop with dose reconstruction experts from Russia, Kazakhstan and the United States organized by the National Cancer Institute.

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